

REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 5-7 and 10-15 are pending in the application. Claims 1-4, 8 and 9 have been canceled without prejudice or disclaimer. Claims 5 and 10 are independent. Claims 5, 6, 10 and 12 are amended. Claims 13-15 are added.

The following remarks are believed to be fully responsive to the Office Action, and to render all the claims at issue patentably distinguishable over the cited references. Reconsideration of this application, as amended, is respectfully requested.

Claim Rejections Under 35 U.S.C. § 102(b)/103(a)

Claims 5-8 and 10-12 stand rejected under 35 U.S.C. §102(a) as being unpatentable over Jwo (U.S. 6,156,596) in view of Hirabayashi (U.S. 5,614,445) and Applicant's disclosed related art. This rejection is respectfully traversed.

While not conceding the appropriateness of any of the rejections, but merely to advance prosecution of the instant application, independent claim 5 is amended to recite a combination of steps in a method for manufacturing a semiconductor device, including "defining the semiconductor substrate with chip formation areas and scribe lane areas which define and isolate each chip formation area; forming a mask on the semiconductor substrate to open all

chip formation areas except the scribe lane areas; forming a deep well area in each chip formation area by implanting an impurity of a second conductivity type using the mask and forming the scribe lane areas, each deep well area having a second conductivity type opposite the first conductivity type and the scribe lane areas having the first conductivity type" and "removing the mask."

Independent claim 10 is amended to recite a combination of steps in a method for manufacturing a semiconductor device, including "forming scribe lanes of the first conductivity type in the semiconductor substrate, said scribe lanes isolating chip formation areas and containing only an unetched portion of the semiconductor surface; forming a deep well area in all areas of each chip formation area except the scribe lanes, each deep well area having a second conductivity type opposite the first conductivity type; and forming separately a first conductive well area and a second conductive well area within the deep well area."

It is respectfully submitted that the combinations of steps set forth in independent claims 5 and 10 are not disclosed or rendered obvious by the applied prior art of record, including Jwo, Hirabayashi or Applicant's disclosed related art.

Jwo discloses a method for fabricating a complementary metal oxide semiconductor image sensor including a plurality of chips 100, each of which contains pixels 101, wherein every chip 100 is separated from the neighboring

chip 100 by a scribe line 102, as shown in FIG. 1. The chips 100 are moreover sectioned from the wafer by cutting along the scribe line 102. However, Jwo does not teach or suggest “defining the semiconductor substrate with chip formation areas and scribe lane areas which define and isolate each chip formation area; forming a mask on the semiconductor substrate to open all chip formation areas except the scribe lane areas; forming a deep well area in each chip formation area by implanting an impurity of a second conductivity type using the mask and forming the scribe lane areas, each deep well area having a second conductivity type opposite the first conductivity type and the scribe lane areas having the first conductivity type” and “removing the mask,” as recited in claim 5. Moreover, Jwo does not teach or suggest “forming scribe lanes of the first conductivity type in the semiconductor substrate, said scribe lanes isolating chip formation areas and containing only an unetched portion of the semiconductor surface; forming a deep well area in all areas of each chip formation area except the scribe lanes, each deep well area having a second conductivity type opposite the first conductivity type; and forming separately a first conductive well area and a second conductive well area within the deep well area,” as recited in claim 10.

The Office Action relies on Hirabayashi for teachings of a deep well area having a second conductivity type opposite the first conductivity type, forming at least one well area within the deep well area, and forming a first and a

second conductivity type well areas within the deep well area. However, Hirabayashi does not teach or suggest the above-cited limitations of claims 5 and 10, and therefore fails to cure the deficiencies of Jwo with respect to these claims.

The Office Action relies on Applicant's disclosed related art for teach selectively forming an n-type deep well on a p-type substrate and forming a p-type well within the n-type deep well. However, Applicant's disclosed related art does not teach or suggest the above-cited limitations of claims 5 and 10, and therefore does not cure the deficiencies of Jwo and Hirabayashi with respect to these claims.

In view of the foregoing, it is respectfully submitted that the applied prior art of record, including Jwo, Hirabayashi or Applicant's disclosed related art, fails to teach or suggest the combinations of steps set forth in the independent claims. It is believed that the independent claims are allowable. Since the remaining claims depend from these allowable independent claims, they are also allowable for at least the above reasons, as well as for the additional limitations provided thereby. Thus, all claims are allowable.

CONCLUSION

Accordingly, Applicant respectfully requests that Examiner pass this case to issue.

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Art Unit 2822

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If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Sam Bhattacharya, Registration No. 48,107, at (703) 205-8000, in the Washington, D.C. area.

Applicant respectfully petitions under the provisions of 37 C.F.R. 1.136(a) and 1.17 for a one-month extension of time in which to respond to the Examiner's Office Action. The Extension of Time Fee in the amount of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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